Bull. Mus. natn. Hist. nat., Paris, 4e sér., **8**, 1986,
section A, n° 2 : 295-311.

Marine nematodes from Guadeloupe and other Caribbean Islands
IV. Taxonomy of the *Desmoscolex frontalis* complex (Desmoscolecini)

by Wilfrida DECRAEMER

Résumé. — Description d'une espèce nouvelle *Desmoscolex (Desmolorenzenia) gourbaultae* sp. nov., caractérisée par seize anneaux corporels quadricomoïdes et par l'insertion de la première paire de soies somatiques dorsales sur la tête. Révision et discussion de *Desmoscolex (Desmolorenzenia) frontalis* sensu Timm, 1970, et de quelques espèces voisines ; *D. (D.) frontalis* Gerlach, 1952, est considérée comme sp. inq.

Abstract. — A new species *Desmoscolex (Desmolorenzenia) gourbaultae* sp. nov. is described. It is characterized by 16 quadricomoid main rings and the position of the first pair of somatic setae subdorsally on the head. *Desmoscolex (Desmolorenzenia) frontalis* sensu Timm, 1970, and several related species are discussed. *D. (D.) frontalis* Gerlach, 1952, is considered as sp. inq.

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During a survey of the littoral meiofauna of the Lesser Antilles, desmoscolecids occurred in several of the samples taken from the sediment of intertidal and subtidal localities in Guadeloupe, its satellite islands and in Martinique.

Among the Desmoscolecini Decraemer, 1985, gathered, a remarkable new species *Desmoscolex (Desmolorenzenia) gourbaultae* sp. nov. was found ; it is related to *D. (D.) frontalis* Gerlach, 1952. In the samples of Martinique another specimen occurred, closely resembling *D. (D.) frontalis*. A study was started of *D. (D.) frontalis* sensu Timm, 1970, and of specimens from the North Sea, all belonging to what can be considered as the *D. (D.) frontalis* complex.

MATERIAL AND METHODS

Data on the different methods of sampling, the grain size analyses and the $CaCO_3$ contents of the sediment samples from Guadeloupe and Martinique are to be found in RENAUD-MORNANT & GOURBAULT (1981) ; RENAUD-MORNANT *et al.* (1983) and in GOURBAULT *et al.* (1985).

Desmoscolex (Desmolorenzenia) frontalis sensu Timm, 1970, was studied from the nematode collection of the University of California (UCNC), Davis, California.

The material from the Southern Bight of the North Sea is collected under contracts from the Ministry of Scientific Policy of Belgium (Concerted Actions Oceanography) and the Ministry of Public

Health (Management Team Mathematical Model of the North Sea) by the Section of Marine Biology of the State University of Gent.

Type specimens are deposited in the nematode collection of the Muséum national d'Histoire naturelle, Paris (AN 498), the Koninklijk Belgisch Instituut voor Natuurwetenschappen, Brussel (RIT 113-118) and the Instituut voor Dierkunde, Rijksuniversiteit Gent, Belgium (RUG 703).

The drawings were made with the aid of a camera lucida of REICHERT POLYVAR.

ABBREVIATIONS USED

L, body length ; hd, maximum head dimensions (length by width) ; cs, length of cephalic setae ; sd_n, length of subdorsal somatic seta on main ring n ; sv_n, length of subventral somatic seta in main ring n ; sl_n, length of sublateral somatic seta on main ring n ; sd_K, length of first pair of subdorsal somatic seta inserted on head ; phar, length of pharynx ; t, tail length ; tmr, length of terminal ring ; tmrw, maximum width of terminal ring ; mbd, maximum body diameter ; (mbd), maximum body diameter, external material not included ; spic, length of spicules measured along the median line ; gub, length of gubernaculum ; V, distance of vulva from anterior body end as percentage of total body length ; (sp), length of lanceolate distal end of subdorsal seta.

All measurements are in micrometer (μm). Values between brackets are mean values.

DESCRIPTIONS

Subfamily DESMOSCOLECINAE Shipley, 1896

Tribe DESMOSCOLECINI Decraemer, 1985

Genus **DESMOSCOLEX** Claparède, 1863

Desmoscolex (Desmolorenzenia) gourbaultae sp. nov. [1]

(Figs 1-3)

MATERIAL : 1 ♂ holotype (slide AN 498). — Paratypes : 3 ♂♂ (slide AN 498), 1 ♂ (slide RIT 113), 1 ♂ (slide RIT 114), 2 ♂♂ (slide RIT 116), 2 ♂♂ (slide RIT 117), 2 ♂♂ (one ♂ sectioned, slide RIT 118), 1 ♂ (slide RUG 703), 1 ♀ (slide RIT 113), 2 ♀♀ (slide RIT 114), 2 ♀♀ (slide RIT 115), 2 ♀♀ (slide RIT 116), 1 ♀ (slide RUG 703).

MEASUREMENTS : Holotype male : L = 215, hd = 19 × 18, cs = 22, sd_K = 22, sd_2 = 15, sd_4 = 14, sd_6 = 15, sd_8 = 14, sd_{10} = 14, sd_{12} = 15, sd_{15} = 23, sd_{16} = 25, sv_1 = 4, sv_3 = 15, sv_5 = 10, sv_7 = 10, sv_{11} = 10, sv_{13} = 5.5, sv_{14} = 5.5, t = 37, tmr = 20, tmrw = 16, mbd = 26, (mbd) = 20, phar = 30, spic = 36. — Paratype males (n = 10) : L = 190-225 (205), hd = 17-19 × 17-19, cs = 20-25, sd_K = 20-26 (22), sd_2 = 13-21 (15), sd_4 = 13-18 (15), sd_6 = 13-15, sd_8 = 13-15, sd_{10} = 14-15, sd_{12} = 14-18 (16), sd_{15} = 21-25 (22), sd_{16} = 23-27 (25), sv_1 = 3.5-5.5, sv_3 = 10-16 (13), sv_5 = 8-12 (10), sv_7 = 8.5-12 (11), sv_{11} = 11-15 (12), sv_{13} = 4.5-8 (5.5), sv_{14} = 5-8 (6), t = 32-44 (37), tmr = 19-22, tmrw = 15-18, mbd = 24-30, (mbd) = 18-24, phar = 27-30, spic = 34-38 (35). — Paratype females (n = 7) : L = 190-230 (205), hd = 17-19 × 17-19, cs = 18-22, sd_K = 20-23, sd_2 = 13-16, sd_4 = 13-15, sd_6 = 12-15, sd_8 = 12-14, sd_{10} = 13-15, sd_{12} = 14-17, sd_{15} = 17-24 (21), sd_{16} = 24-26, sv_1 = 3.5, sv_5 = 7-10, sv_7 = 8-11 (9), sv_{13} = 7-9.5, t = 31-37, tmr = 31-37, tmrw = 16-19, phar = 28-37 (30) ; V = 53-62 % (57 %).

1. Etymology : species named after Dr. N. GOURBAULT, Muséum national d'Histoire naturelle, Paris.

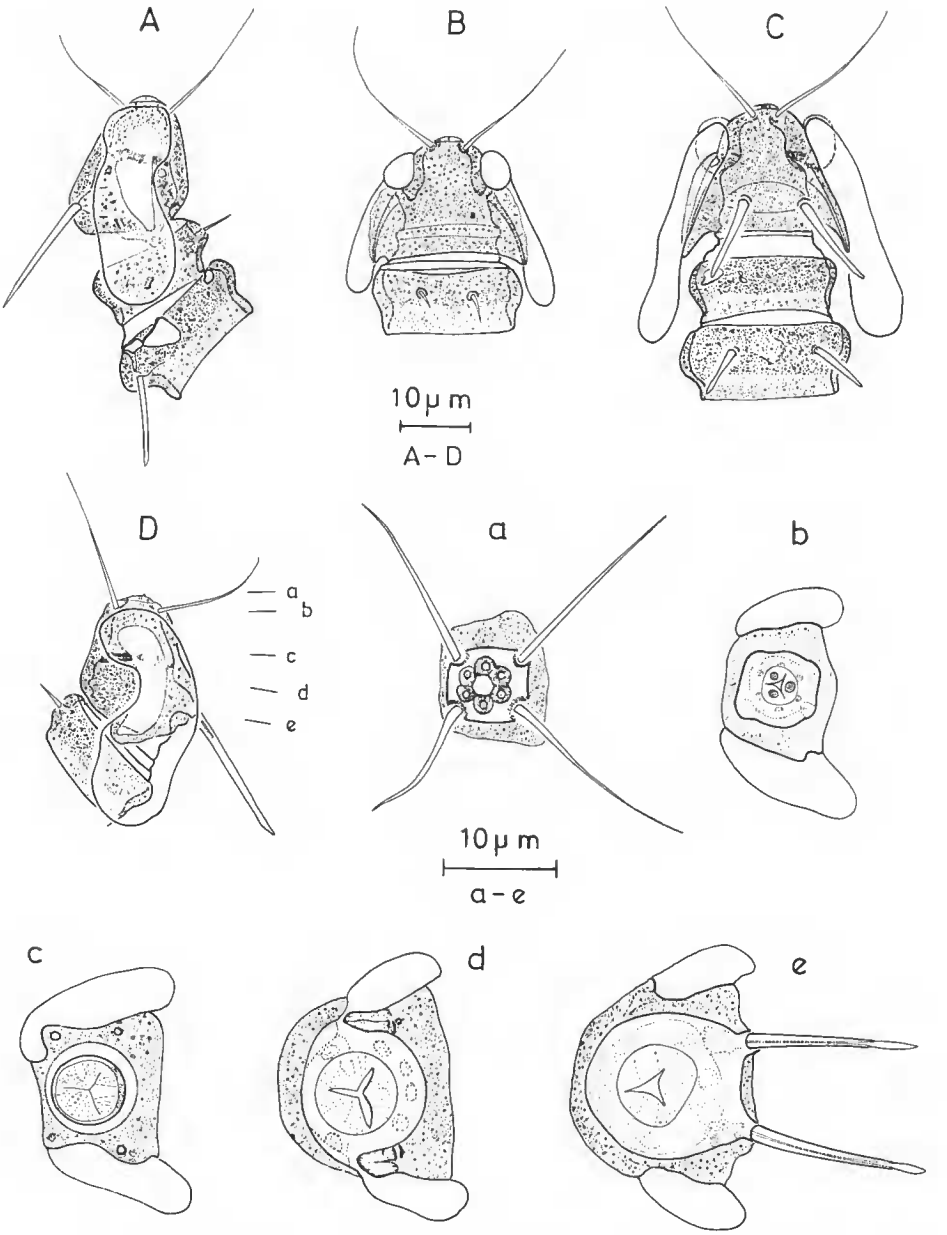


FIG. 1. — *Desmoscolex (Desmolorenzenia) gourbaultae* sp. nov. : A, surface view of head (♂ paratype) ; B, surface view of ventral side of head (♀ paratype) ; C, surface view of dorsal side of head (♂ paratype) ; D, surface view of head (♂ paratype) showing levels at which the transverse optical sections a-e were made ; a, apical view ; b, at level of stoma ; c, in anterior half of head ; d, at level opening amphidial canal ; e, at level first pair of subdorsal somatic setae.

Body short, tapered towards the extremities. Cuticle with 16 broad quadricomoid main rings with the layer of secretion and fine foreign material partly covering the interzone ; interzone with narrow cuticular rings. Head as wide as long, with truncated anterior end, more or less triangular in side view apparently because of the fusion of "head" with first main ring. Cuticle thin, covered by a layer of fine granular concretion material, except in labial region, and laterally opposite the central part of the covering amphids. Posterior head region annulated at level of insertion of first pair of somatic setae. Extreme anterior end with six labial papillae around the oral opening (fig. 1a) ; papillae obscure in side view.

Cephalic setae 18-25 μm long and fine, inserted directly on head near anterior border.

Amphids with rounded, elongated fovea, largely covering the head laterally ; anteriorly extending to the level of the insertion of the cephalic setae and posteriorly between anterior border of first ring up to second main ring. Amphidial canal ending in anterior half of head (fig. 1B, 1d).

Somatic setae differ ; the subdorsal ones have a large basal shaft and a hardly marked lanceolate distal end with open tip, whereas the subventral setae are finer, tapering to a pointed open tip. The first pair of subdorsal setae on the head and those on the last two main rings are elongated (fig. 2A). Subventral setae shorter than subdorsal ones. Somatic setae with sexual differentiation in number and arrangement between male and female. Terminal pair of somatic setae connected with a distinct granular gland cell.

Ocelli narrow, elongated (9.5 μm by 3 μm in a male specimen), ochrous pigment spots situated at the level of main ring 4 ; absent in some specimens.

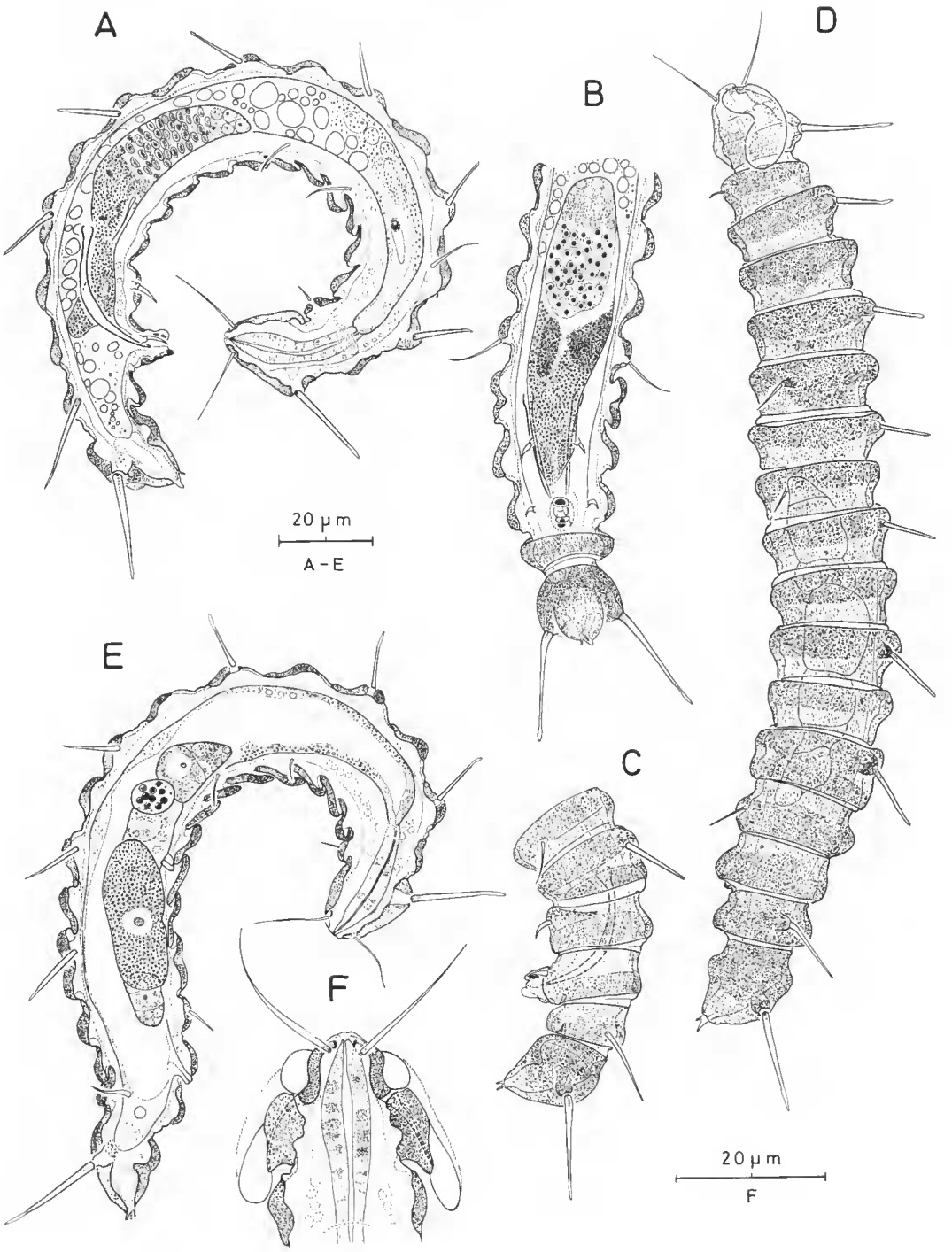
Stoma minute, hexagonal in front view (fig. 1a). Pharynx short, almost cylindrical (except for a slight swelling in head region), extending to the posterior end of the first main ring or of the following interzone. Pharynx subterminally surrounded by a rather obscure nerve ring. Pharyngeal glands extending far anteriorly (fig. 1b, c, d). Intestine narrow and finely granular anteriorly, gradually widening posteriorly to a broad cylinder with small and large globular particles. Intestine largely overlapping the rectum by a long postrectal blindsac, extending to the anterior part of the terminal main ring.

Tail with two main rings. Endring, 19-23 μm long and nearly as wide as long, from insertion of terminal pair of somatic setae clearly tapering to a short naked spinneret with 1-3 additional minute open tubes (? outlets of caudal glands), (fig. 3A : spinneret + 1 additional tube ; fig. 3B, C : spinneret + 3 additional tubes ; fig. 3D, F : spinneret + 2 additional tubes). Phasmata not observed.

Male

Inversion of direction of the main rings occurring on 2 two-cone shaped : dorsally on ring 12 and ventrally on ring 13. Only in two male specimens out of 13, inversion of direction occurs on main ring 12 as in female.

FIG. 2. — *Desmoscolex (Desmolorenzenia) gourbaultae* sp. nov. : A, entire specimen (♂ holotype) ; B, male reproductive system, ventral view (paratype) ; C, surface view of posterior body region (♂ paratype) ; D, entire female in surface view (paratype) ; E, entire specimen (♀ paratype) ; F, ventral view of head region in longitudinal optical section (♀ paratype).


A
B
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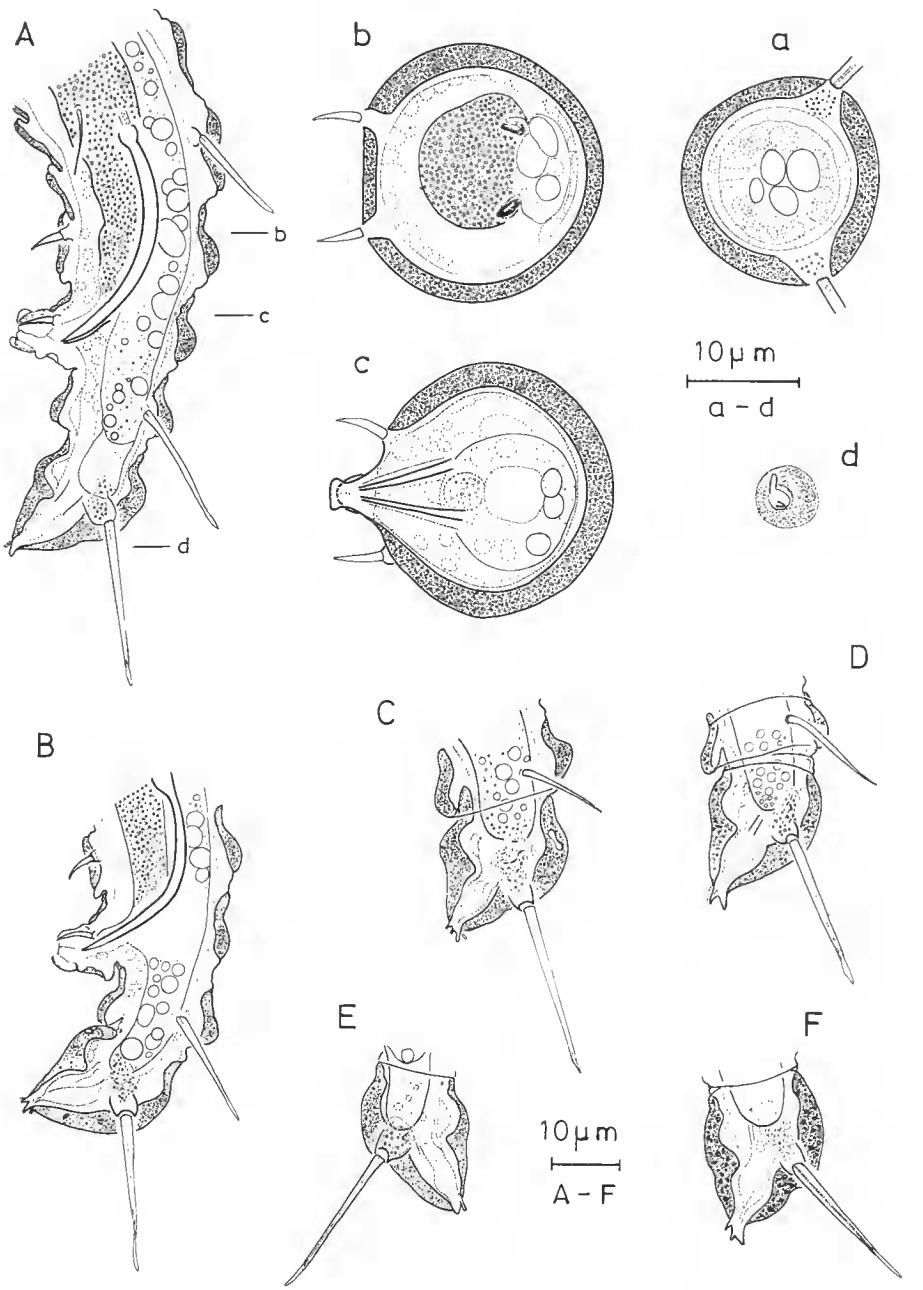

FIG. 3. — *Desmoscolex (Desmolorenzenia) gourbaultae* sp. nov. : A, tail and copulatory apparatus showing levels at which the transverse optical sections a-d were made (♂ paratype) ; a, at level of sd_{16} ; b, at level of sv_{14} ; c, at level of cloaca ; d, tail tip in 'en face' view ; B, tail and copulatory apparatus (♂ paratype) ; C, tail end (♀ paratype) ; D, tail end (♀ paratype) ; E, tail end (♂ paratype) ; F, tail end (♀ paratype).

Somatic setae arranged as follows : subdorsal, right side K 2 4 6 8 10 12 15 16 = 9 ; left side K 2 4 6 8 10 12 15 16 = 9 — subventral, right side 1 3 5 7 11 13 14 = 7 ; left side 1 3 5 7 11 13 14 = 7. First pair of subdorsal somatic setae inserted on head region (K). The subventral setae on main rings 3 and 11 shifted respectively to a subdorsal and a ventrosublateral position. The pairs of subventral setae on main rings 13 and 14 differ ; they are short broad setae, curved distally (copulatory setae). The subventral setae on main ring 1 are the shortest, those on main ring 3 the longest.

Testis single. Spicules, 34-38 μm long, curved ; corpus with slightly swollen middle part, tapering distally to a pointed tip, proximally to a slightly differentiated capitulum. Gubernaculum obscure. Cloacal tube broad, clearly protruding from the medioventral body wall in main ring 14 ; its wall with cuticularized pieces (fig. 2B, A).

Female

Inversion of direction of the main rings situated within the two-cone shaped main ring 12.

Somatic setae arranged as follows : subdorsal, right side K 2 4 6 8 10 12 15 16 = 9 ; left side K 2 4 6 8 10 12 15 16 = 9 — subventral, right side 1 5 7 13 = 4 ; left side 1 5 7 13 = 4. First pair of somatic setae inserted on head region (K).

Reproductive system didelphic-amphidelphic. Two globular spermathecae present with small spermatozoids (fig. 2E). Vulva rather obscure, situated between main rings 9 and 10.

Anal tube short, slightly protruding from medio-ventral body-wall at the posterior end of main ring 14.

Juveniles unknown.

Type locality : Anse Laborde, Guadeloupe station 2, sample 45, collected by pit digging (Karaman-Chappuis sampling technique), north-east of the beach at 110 cm depth, on 14-XII-1982 by N. Gourbault.

Other localities : Les Saintes, Pompierre beach station 2, sample 38, collected by sand elutriation in the swash zone by N. Gourbault & J. Renaud-Mornant.

Diagnosis : *Desmoscolex (Desmolorenzenia) gourbaultae* sp. nov. has 16 quadricomoid main rings with inversion of direction in the two-cone shaped ring 12 (in ♀♀, rarely in ♂♂) or over two partly two-cone shaped rings 12 and 13 (in ♂♂ only), a triangular shaped head formed by fusion of anterior part with first main ring, a setal pattern with differentiation between male and female, first pair of somatic setae subdorsally on the head, cephalic setae inserted near anterior head end. Males with 2 pairs of copulatory setae ; relatively long curved spicules with offset capitulum and slightly swollen middle region.

Remarks

Head apparently formed by a fusion of the real head region (see definition in Decraemer, 1975*b*) and the first main ring as indicated by : the insertion of the first pair of subdorsal somatic setae ; the presence of an enlarged cuticular annule (as in main rings) in posterior head region at level of insertion somatic setae ; the rather anterior position of the opening of the amphidial canal, *i.e.* anterior to the enlarged cuticular annule.

Tail end with 2-4 open tubes, one tube (the spinneret) larger than the others, difference in size more or less pronounced according to the individual. This feature resembles the separate outlets for the three caudal glands, *e.g.* in *Triepsilonema tripapillata* Decraemer, 1982 and the minute terminal tubercles in *Ixonema sordidum* Lorenzen, 1971. However, in Desmoscolecinae the caudal glands are hardly developed, separate outlets of these glands seem doubtful here.

The presence of differentiated subventral setae (copulatory setae) in male has never been observed before within the Desmoscolecinae.

Desmoscolex (Desmolorenzenia) gourbaultae sp. nov. resembles *Desmoscolex frontalis* Gerlach, 1952, in head-shape and habitus and shows affinities with the *Desmoscolex frontalis* complex (see further descriptions and discussions).

Desmoscolex (Desmolorenzenia) sp. 1 apud *D. (D.) frontalis* Gerlach, 1952
(Fig. 4)

MATERIAL : 1 ♂ (slide RIT 119).

MEASUREMENTS : Male (n = 1) : L = 150, hd = 11 × 11, cs = 16, sd_1 = 18, sd_3 = 11, sd_5 = 11, sd_7 = 11, sd_9 = 8.5, sd_{11} = 11, sd_{13} = 11, sd_{16} = 18, sd_{17} = 20, sv_2 = 5, sv_8 = 7, sv_4 = 12, sv_6 = 8, sv_{12} = 9, sv_{14} = 5.5, sv_{15} = 4.5, t = 28, tmr = 17, tmrw = 11, mbd = 18, phar = 23, spic = 15.

Male

Body very short, slightly tapered towards the extremities. Cuticle with 17 broad quadricomoid main rings with the layer of secretion and fine and coarse concretion material partly covering the interzone ; interzone with narrow cuticular rings. Inversion of direction of the main rings situated within the slightly marked two-cone shaped main ring 14.

Somatic setae arranged as follows : subdorsal, right side 1 3 5 7 9 11 13 16 17 = 9 ; left side 1 3 5 7 9 11 13 16 17 = 9 — subventral, right side 2 4 6 8 – 12 14 15 = 7 ; left side 2 4 6 8 – 12 14 15 = 7 with the subventral setae on main ring 4 shifted to a dorsosublateral position. Somatic setae differentiated in : fine subventral setae tapered to a fine tip and subdorsal setae with a wider basal shaft and a fine open distal tip (only in the first pair and terminal pair of elongated subdorsal setae is the distal part differentiated in a fine lanceolated end). Subventral setae shorter than subdorsal ones, except for the setae on main ring 4. Subdorsal setae on main rings 1,16 and 17 much longer than those in between.

Head as wide as long, more or less conical, with narrow truncated end, and almost completely covered by concretion material except in labial region and a small zone around the opening of the amphidial canal.

Cephalic setae longer than the head, very fine and inserted without peduncle subterminally at the base of the lip region.

Amphids with long fovea, anteriorly extending to near the insertion of the cephalic setae and posteriorly to largely over the second main ring.

Stoma minute. Pharynx short, about cylindrical, with enlargement opposite base of head ; extending to posterior end of second main ring. Intestine narrow anteriorly, gra-

dually widening to a broad cylinder with small and large globules ; largely overlapping the rectum by a long postrectal blindsac extending to the insertion of the terminal pair of somatic setae. Cloacal tube broad, largely protruding from medioventral body wall in main ring 15.

Testis single. Spicules 17 μm long, strongly tapered distally to a fine tip. Gubernaculum not observed. Tail with two main rings. Endring broad, slightly tapered to a 3 μm long, fine, naked spinneret. No phasmata observed.

Females and juveniles unknown.

Locality : Les Anses d'Arlets, Martinique station 14, sample 32, collected by pit digging at 80 cm depth, on 23-II-1981 by N. Gourbault & J. Renaud-Mornant.

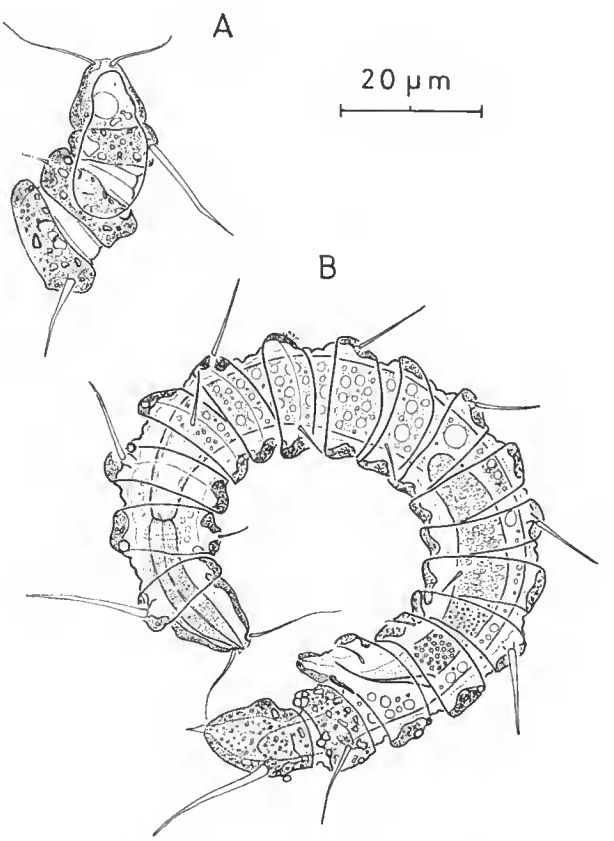

Fig. 4. — *Desmoscolex (Desmolorenzenia)* sp. 1 apud *D. (D.) frontalis* Gerlach, 1952 : A, surface view anterior body region (♂) ; B, male, entire specimen.

REMARKS

The male specimen from Martinique resembles closely *D. (D.) frontalis* Gerlach, 1952 having a comparable habitus with 17 quadricomoid (not pronounced) main rings, a similar head-shape and long fine cephalic setae inserted close to anterior head end, a very short body length and a similar shape of the subdorsal somatic setae, with hardly marked distal end. It differs, however, from *D. (D.) frontalis* type specimen (sex not indicated, but probably a female) in the arrangement of the subventral somatic setae without sv_{10} but with sv_{15} (the reverse in the type specimen) and the longer amphids. However, GERLACH (1952) states that the subventral setae in his specimen cannot be known with certainty.

The specimen from Martinique resembles the male from the Indian Ocean described as *Quadricoma frontalis* (Gerlach, 1952) in habitus, head-shape and insertion of cephalic setae. It differs from it in shape and length of the spicules, in arrangement of the somatic setae, in shape of the subdorsal setae (without marked lanceolate tip as in TIMM's specimen) in the shorter and wider shape of the endring, in amphid-shape (not restricted to the head as in TIMM's specimen), in the position of the inversion of the main rings (in ring 14 instead of 13 in TIMM's specimen) and by its very short body length (150 μm against 230 μm in TIMM's specimen).

The male specimen from Martinique belongs to another species than the male specimen from the Indian Ocean. However, it cannot be determined which of the two males belongs to *D. (D.) frontalis* Gerlach, 1952 (type specimen from Kieler Bucht, L = 152 μm). It is quite possible that all three of them (♂ from Martinique, ♂ from Indian Ocean, ♀ Kieler Bucht) belong to different species. Therefore I prefer to describe the Martinique specimen unnamed until more specimens become available to unravel the *Desmoscolex frontalis* complex.

Desmoscolex (Desmolorenzenia) frontalis Gerlach, 1952 sensu Timm, 1970
(Fig. 5B)

Quadricoma frontalis (Gerlach, 1952) : TIMM, 1970
Desmolorenzenia frontalis (Gerlach, 1952) : FREUDENHAMMER, 1975

REMARKS (based upon a study of TIMM's male specimen from the Indian Ocean)

TIMM's specimen largely agrees with the original description of *D. (D.) frontalis* (fig. 5A), based upon a single specimen (? ♀), in habitus, head- and amphid-shape, cephalic setae ; but differs in arrangement of subventral somatic setae (see remark in *Desmoscolex (Desmolorenzenia)* sp. 1) and in shape of subdorsal somatic setae with offset lanceolate distal end (except on ring 16), a slightly longer body (230 μm against 192 μm) and a longer, slenderer endring . These differences are not of such a diagnostic value as to allow the creation of a separate species for TIMM's specimen.

The spicules in TIMM's specimen differ slightly in length, 50 μm (right side) and 46 μm (left side), without any difference in shape.

Subdorsally inserted pair of somatic setae on main ring 16 without lanceolate distal tip and clearly shorter than the subdorsal setae on main rings 13 and 17. Subventral setae on main rings 2, 12 and 15 laterally shifted.

Desmoscolex (Desmolorenzenia) sp. 2
(Fig. 5E, F)

MATERIAL : 1 ♂, 1 ♀ (slide M09).

MEASUREMENTS : Male (n = 1) : L = 200, hd = 15 × 15, cs = 22, sd_1 = 20 (sp = 4.5), sd_3 = 16 (sp = 6), sd_5 = 13 (sp = 5), sd_7 = 15 (sp = 5), sd_9 = 14 (sp = 5), sd_{11} = 16 (sp = 4.5), sd_{13} = 21 (sp = 5.5), sd_{16} = 14, sd_{17} = 34 (sp = 6), sv_2 = 14, sv_4 = 13, sv_6 = 10, sv_8 = 11, sv_{12} = 13, sv_{14} = 7.5, sv_{15} = 12, t = 46, tmr = 28, tmrw = 10, mbd = 25, phar = 27, spic = 36. — Female (n = 1) : L = 175, hd = 15 × 14, cs = 19, sd_1 = 18, sd_3 = 13, sd_5 = 13, sd_7 = 13, sd_9 = 14, sd_{11} = 15, sd_{13} = 20, sd_{16} = 8.5, sd_{17} = 32, sv_2 = 10, sv_4 = 11, sv_6 = 10, sv_8 = 11, sv_{12} = 11, sv_{14} = 14, t = 36, tmr = 28, tmrw = 11, mbd = 29, phar = 30, V = 57 %.

A male and a female specimen from the North Sea were found, largely agreeing with TIMM's specimen of *D. (D.) frontalis*.

Body short ; cuticle with 17 quadricomoid main rings with inversion in direction in main ring 13. Somatic setae with 9 pairs of subdorsal setae and 7 pairs of subventral setae in male (sv_{10} lacking), 6 pairs in female (without sv_{10}, sv_{15}). Subdorsal setae fine, with narrow lanceolate distal end ; subventral setae fine, wider at base, tapering to a pointed tip. Subventral setae on main rings 2, 12 and 15 laterally shifted.

Head rounded triangular with narrow truncated anterior end. Cephalic setae fine, inserted subterminally near labial region. Amphids with long fovea extending beyond the head, up to the posterior border of main ring 1, and posteriorly accompanied by an extension of the head cuticle (fig. 5F).

Digestive system typical for the genus (DECRAEMER, 1975*a*) ; long postrectal blindsac present.

Male reproductive system typical (DECRAEMER, 1975*a*). Spicules, 36 μm long, fine, strongly curved structures with slightly marked capitulum. Gubernaculum not observed.

Reproductive system in female typical for the genus (DECRAEMER, 1975*a*). Vulva obscure, presumably situated in main ring 10.

Tail with two main rings. Endring, 28 μm long, with a wide cylindrical anterior part, posteriorly tapering to a fine naked spinneret.

Juveniles unknown.

LOCALITY : North Sea, 51°28′25″ N — 02°15′00″ E, medium sand with 34 % shells, collected at 32 m depth, in summer 1972.

REMARK : The specimens from the North Sea differ from TIMM's specimen of *D. (D.) frontalis* by the longer amphids accompanied by an extension of the head cuticle, by the finer and shorter spicules (36 μm against 46-50 μm), by the absence of sv_{10} in male. They probably belong to a closely related species.

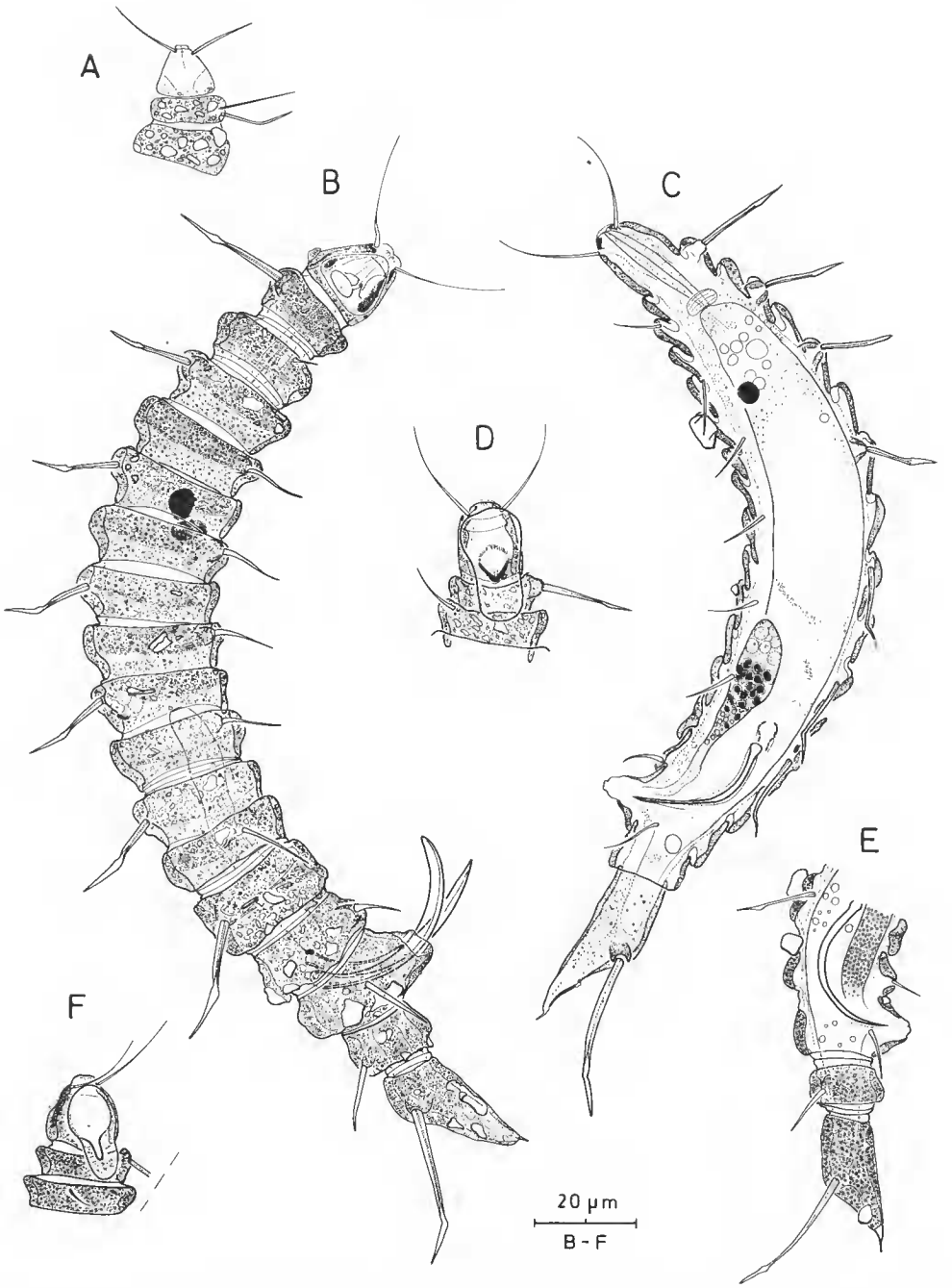

FIG. 5. — A, *D. (D.) frontalis* : surface view of head type specimen, redrawn from GERLACH (1952). B, *D. (D.) frontalis* sensu Timm, 1970, surface view entire specimen (♂ UCNC). C-D, *Desmoscolex (Desmolorenzenia)* sp. 3 : C, entire male ; D, head in surface view (♂). E-F, *Desmoscolex (Desmolorenzenia)* sp. 2 : E, tail and copulatory apparatus (♂) ; F, head in surface view (♀).

Desmoscolex (Desmolorenzenia) sp. 3
(Fig. 5C, D)

MATERIAL : 1 ♂ (slide ZB4B).

MEASUREMENTS : Male (n = 1) : L = 190, hd = 17 × 14, cs = 22, sd_1 = 21 (sp = 7), sd_3 = 19 (sp = 7), sd_5 = 19 (sp = 7), sd_7 = 18 (sp = 6.5), sd_9 = 18 (sp = 5.5), sd_{11} = 17 (sp = 5), sd_{13} = 19 (5), sd_{17} = 33 (8.5), sv_2 = 11, sv_4 = 11, sv_6 = 11, sv_8 = 10, sv_{12} = 10, sv_{14} = 10, sv_{15} = 13, t = 49, tmr = 34, tmrw = 10, mbd = 30, phar = 29, spic = 31 (left), 38 (right).

Another male specimen from the North Sea resembles *D. (D.) frontalis*.

Male

Body small, slightly tapered towards the extremities. Cuticle with 17 broad quadricomoid main rings with inversion in ring 13. Somatic setae arranged according to the typical pattern of 17-ring species with 9 pairs of subdorsal setae and 8 pairs of subventral setae (LORENZEN, 1969 : 242). Subdorsal setae with offset lanceolate distal end ; subventral setae fine, tapered to a pointed tip. Subventral setae in main ring 15 slightly laterally shifted.

Head longer than wide, with slightly narrower truncated anterior end. Cephalic setae fine, inserted subterminally at base of lip region. Amphids with large, elongated fovea extending from lip region to anterior end of second main ring. Head cuticle with posterior extension along the amphids.

Digestive system typical. Large postrectal blindsac present. Ocelli almost circular pigment spots, opposite posterior end of main ring 4 and beginning main ring 5.

Reproductive system with one testis. Spicules differentiated : right spicule 38 μm long, larger than the shorter and finer left spicule, 31 μm long (fig. 5C). Gubernaculum obscure.

Tail with two main rings. Endring, 34 μm long ; posterior to the insertion of terminal pair of somatic setae tapering to a fine, 6.5 μm long spinneret.

Female and juveniles unknown.

LOCALITY : North Sea, 51°18′40″ N — 2°40′45″ E, well sorted, medium sand, collected at 20 m depth on 5-IX-1978.

REMARKS : This male specimen bears a resemblance to *D. (D.) frontalis* (in TIMM, 1970) in habitus, but differs by its longer and narrower head and by the spicules both clearly different in length and shape. It resembles the other North Sea specimens in amphid-shape and posterior extension of the head cuticle along the amphids.

It probably represents another species closely related to the formerly described species. No name is given until more specimens become available.

KEY TO THE MALES OF *Desmolorenzenia*

1 — head-shape triangular in side view, with narrow truncated anterior end ; cs fine, long, subterminally inserted near front of head 2
— head-shape globular to rounded rectangular in side view ; cs different 5

2 — 16 main rings ; sd_1 on head ; terminal ring with spinneret and additional tubes ; setal pattern : 9 sd, 7 sv (no sv_{15}) ; spicules 34-38 µm ; L = 190-225 µm..... *Desmoscolex (Desmolorenzenia) gourbaultae* sp. nov.

— 17 main rings ; setal pattern different ; no additional tubes on endring ; spicules with different shape..... 3

3 — setal pattern typical desmoscolecoid : 9 sd, 8 sv ; subdorsal somatic setae with offset spear-shaped distal part ; amphids restricted to the head ; spicules : 50 µm (right), 46 µm (left) ; L = 230 µm..... *Desmoscolex (Desmolorenzenia) frontalis* sensu Timm, 1970

— setal pattern : 9 sd, 7 sv (no sv_{10}) ; subdorsal setae with narrow hardly marked lanceolate distal part ; amphids extending beyond head up to main ring 2 ; spicules different..... 4

4 — spicules 36 µm long, strongly curved ; amphids accompanied by cuticular extension of head ; inversion ring 13 ; L = 200 µm..... *Desmoscolex (Desmolorenzenia)* sp. 2

— spicules 15 µm long, slightly curved distally ; amphids larger, without extension of head cuticle ; inversion ring 14 ; L = 150 µm..... *Desmoscolex (Desmolorenzenia)* sp. 1

5 — terrestrial form ; 18 main rings ; head wide, rounded rectangular ; 6 labial setae ; cephalic setae at anterior head end ; setal pattern : 9 sd, 8 sv ; inversion ring 14 or absent ; spicules 16-23 µm ; L = 145-235 µm..... *Desmoscolex (Desmolorenzenia) montana* (Decraemer & Sturhan, 1982)

— marine form ; 17 or 18 main rings ; head and cephalic setae different ; labial setae absent or present ; inversion ring 13-15 ; setal pattern typical or aberrant..... 6

6 — endring : narrow, elongated cylindrical anteriorly and short, tapered posteriorly ; sd_{17} inserted far posteriorly on endring ; spicules 31 or 87 µm long ; L = 395, 745 µm long..... *Desmoscolex (Desmolorenzenia) eurycricus* Filipjev, 1922

— endring with broad, short cylindrical part and longer tapered posterior part ; sd_{17} inserted more anteriorly..... 7

7 — setal pattern : 9 sd, 4 sv ; 17 main rings with inversion ring 15 ; head globular, amphids restricted to it ; long spinneret ; spicules 27 µm long ; L = 200 µm..... *Desmoscolex (Desmolorenzenia) vittatus* Lorenzen, 1969

— setal pattern typical : 9 sd, 8 sv..... 8

8 — spicules curved, with differentiation in length and shape : left 31 µm long, fine ; right 38 µm long, stout ; head long rectangular, tapered anteriorly ; amphids extending up to 2nd main ring, with cuticular extension of head ; cephalic setae : long fine, subterminally inserted ; 17 main rings, inversion ring 13 ; L = 190 µm..... *Desmoscolex (Desmolorenzenia)* sp. 3

— spicules different, not differentiated ; head-shape different ; amphids restricted to head ; cephalic setae different ; 17 main rings ; inversion ring 14..... 9

9 — endring with wide cylindrical anterior part and conical, strongly ventrally bent posterior part ; sd_{17} inserted at end cylindrical part..... 10

— endring different ; sd_{17} inserted far posteriorly ; head wide, rounded, slightly anteriorly tapered ; cephalic setae inserted in anterior half ; L = 266 µm ; spicules : 37 µm long [1]..... *Desmoscolex (Desmolorenzenia) hupferi* Steiner, 1916

10 — subdorsal setae with spear-shaped distal end ; head rounded rectangular to quadrangular ; spicules 25-29 µm ; L = 290-375 µm.. *Desmoscolex (Desmolorenzenia) crassicauda* (Timm, 1970)

— subdorsal setae without marked distal end ; sd_{17} elongated ; L = 188 µm long ; spicules : 21 µm long [1]..... *Desmoscolex (Desmolorenzenia) platycricus* Steiner, 1916

1. Length of spicules deduced from original figures.

KEY TO THE FEMALES OF *Desmolorenzenia*

1 — head-shape triangular in side view, with narrow truncated anterior end ; cephalic setae fine, long, subterminally inserted on front head 2

— head-shape and cephalic setae different 3

2 — 16 main rings ; sd_1 on head ; terminal ring with spinneret and additional tubes ; setal pattern : 9 sd, 4 sv ; L = 190-230 µm ..... *Desmoscolex (Desmolorenzenia) gourbaultae* sp. nov.

— 17 main rings ; sd_1 not on head ; no additional tubes on endring ; setal pattern : 9 sd, 6 sv ; L = 175 µm ..... *Desmoscolex (Desmolorenzenia)* sp. 2

3 — terrestrial form ; 18 main rings ; head wide, rounded rectangular ; 6 labial setae ; cephalic setae jointed, inserted on front of head ; setal pattern : 9 sd, 1 sv ; L = 150-250 µm ..... *Desmoscolex (Desmolorenzenia) montana* (Decraemer & Sturhan, 1982)

— marine form, 17 or 18 main rings ; head and cephalic setae different ; labial setae present or absent ; setal pattern different 4

4 — endring narrow elongated : 3-4 times as long as wide ; terminal sd inserted far posteriorly on endring 5

— endring broad, short ; terminal sd inserted more anteriorly 6

5 — 17 main rings ; setal pattern typical : 9 sd, 8 sv ; head globular ; endring 4 times as long as wide ; L = 500-655 µm ..... *Desmoscolex (Desmolorenzenia) eurycricus* Steiner, 1916

— 18 main rings ; setal pattern : 9 sd, 6 sv ; head wide, rounded rectangular ; endring 3 times as long as wide ; L = 500-745 µm ..... *Desmoscolex (Desmolorenzenia) desmoscolecoides* (Timm, 1970)

6 — 17 main rings ; setal pattern : 9 sd, 2 sv ; inversion ring 15 ; head rounded ; endring with long spinneret ; L = 165-185 µm ..... *Desmoscolex (Desmolorenzenia) vittatus* Lorenzen, 1969

— 17 or 18 main rings, setal pattern typical : 9 sd, 8 sv ; inversion ring 14 ; different head-shape. 7

7 — head posteriorly large, rounded ; anteriorly tapered to a truncated end ; 6 labial setae ; cephalic setae short, fine, inserted halfway head length ; L = 135-140 µm ..... *Desmoscolex (Desmolorenzenia) cooleni* (Decraemer, 1978)

— head wider, of different shape ; no labial setae, cephalic setae jointed and stout 8

8 — head rounded rectangular with broad truncated anterior end ; endring with broad cylindrical anterior part and strongly ventrally bent posterior part ; L = 360-456 µm ..... *Desmoscolex (Desmolorenzenia) crassicauda* (Timm, 1970)

— head wide rounded, slightly anteriorly tapered ; endring shorter without differentiation into two parts ; sd_{17} inserted more posteriorly ..... *Desmoscolex (Desmolorenzenia) hupferi* Steiner, 1916

CONCLUSIONS

Within this study we came across a number of species all closely resembling *Desmoscolex (Desmolorenzenia) frontalis* Gerlach, 1952 : they form a *D. (D.) frontalis* complex, difficult to unravel.

They can be clearly distinguished from all other species of *Desmolorenzenia*, mainly by the typical head-shape : triangular in side view, with the fine and elongated cephalic setae inserted subterminally near the frontborder of the head.

Except for the new species, the other species are described upon a single specimen (2 specimens for *Desmoscolex (D.)* sp. 2). They are all derived from different localities : Guadeloupe, Martinique, Indian Ocean, Kieler Bucht, and two other localities in the North Sea.

Since the original description of *D. (D.) frontalis* is based upon a single specimen, probably a female, the species is not well defined. At least two of the species discussed above, may belong to it. Therefore, I consider *D. (D.) frontalis* Gerlach, 1952, as a species *inquirenda* until more specimens (♂ + ♀) from the type locality become available.

The three unnamed species are described to show the taxonomic problems that arise with closely resembling species described on a limited number of specimens, especially in this group of animals for which little is known yet about variability within the population of single locality and between several populations of different localities.

Acknowledgements

I wish to thank Dr. N. Gourbault for the material kindly put at my disposal and Dr. E. M. Noffsinger and Mrs M. Vincx for providing me with specimens from their collections.

I am also grateful to Mrs. R. Van Driessche for the preparation of cross sections and to Mrs. M. N. Helléouet for valuable technical assistance.

Financial support from the Mission Muséum-Antilles and the Convention Ministère de l'Environnement-Muséum is gratefully acknowledged.

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